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Small Grain Variety Trials in South Dakota 1946-1950

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SMALL GRAIN VARIETY TRIALS IN SOUTH DAKOTA

1946 - 1950

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Small Grain Variety Trials in South Dakota 1946-1950 A Progress Report

by
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Variety testing is an integral part of the small grain research at the South Dakota Agricultural Experiment Station. Yield tests of wheat, oats, barley, flax and rye are conducted every year at several locations in the state. In these, new strains and selections are compared with standard and recommended varieties to provide information on the relative merits of all strains tested. Information obtained in these tests is utilized in making varietal recommendations for the guidance of the farmers of this state. The grain breeding work at the station is adjusted on the basis of these results.

Several years' data drawn from several locations are very desirable in obtaining a true picture of the relative performance of small grain varieties. In this report, the 1950 yield and performance data of a selected number of small grain varieties will be presented. Annual yields of these strains obtained during the years 1946-49 are also included where available, along with 5-year and in some cases, 3-year averages.

Location and Size of Tests

Variety tests were conducted at the Main Experiment Station at Brookings, the Central Substation at Highmore, and the North Central Substation at Eureka, as well as at the Range Field Station at Cottonwood. Each of these stations is fairly representative of the surrounding areas.

Climate

The 1950 small grain growing season was characterized by below normal rainfall and temperature at all locations.

A summary of rainfall and temperature records at the four stations is presented in Table 1. Since cold, wet weather in April and May delayed both seeding and emergence, the beneficial effects of the heavy May rainfall were probably very slight. June and early July, the most critical period in small grain development, were particularly deficient in rainfall. Cool summer temperatures delayed maturity and probably resulted in relatively high yields for the available moisture. Summer temperatures were the lowest on record since 1915 and were a major factor in permitting the normal development of the crop from late seeding. During the period between planting and harvesting small grain the number of days in which the temperature exceeded 90°F was: Brookings 5 days; Highmore, none; Eureka, 4 days; and Cottonwood, 13 days.

Diseases

Small grain diseases were widespread in 1950, but, except in a few isolated instances, the amount of injury was not excessive in view of the late planting. Leaf rust of wheat was observed at all stations except Cottonwood. The same was true of Race 15B of stem rust of wheat, which appeared in epidemic proportions for the first time. While all varieties of wheat grown were infected by it, serious yield reductions were only noted in the durum wheats at Brookings. Flax rust was severe on susceptible varieties at Brookings, but pasmo injury was light. Leaf rust of oats, including Race 45, was observed in moderate amounts at Brookings. Stem rust of oats was also noted at Brookings; apparently both Races 7 and 8 were present, so that all varieties of oats were affected, either by one race or the other. "Red leaf" of oats occurred on some varieties. Stem rust occurred on the susceptible varieties of barley, especially at Brookings. Root rots may have been a serious factor in reducing stands of wheat and barley where seedling emergence was delayed due to cold wet conditions.

Insects

Some aphids were found early in the season, and aphids were serious in the southern parts of the State. Very few were found on the experimental plots, however.

Data

Tables 2 - 23 give the 1946-1950 yield and 1950 performance of small grain at the various stations. Averages for this period are given where available. Test weights are for the 1950 crop only. Notes on plant performance are generally taken from the Main Experiment Station at Brookings, unless otherwise indicated. Conditions at Brookings tend to favor a higher incidence of some plant diseases than at the western stations. This may be due to greater availability of disease organisms in Eastern South Dakota, as well as an environment more suited to maximum disease development.

In the tables, some notes on disease injury are given in percentages, others as heavy, moderate or light, (designated by the letters H, M and L). The necessary difference between variety means at the 5 percent level of probability is also given. Where differences between variety yields or averages are very small or below significance, these differences may be due to random variation.

Another factor in evaluating varietal performance in 1950 is the unusual season, which tended to favor late varieties of all crops. Years favorable to late varieties occur rather infrequently in South Dakota; placing too much stock in 1950 performance might lead to varietal choices that might result in crop failure in years when early varieties would be best.

Varietal Performance

In spring wheat, Rushmore, Rival and Pida have rather similar yield records at all stations. The three-year re-

cord of Lee wheat at Brookings is excellent. Thatcher at Cottonwood has a good record.

In the durum wheats, Stewart has the best long-time record while in winter wheats, Minter has been best at Brookings. Pierre rye has done well at all stations, although Emerald has been satisfactory at Brookings.

In oats, the performance of varieties has depended on the severity of diseases. Where and when diseases have been severe at Brookings, the early Bond types, such as Clinton and Mindo have been superior; in years and at locations where diseases were of no major importance some of the old established varieties have performed fully equal to the newer varieties. Thus, Marion, Vikota and Tama have done very well at Highmore and Eureka, while at Cottonwood, Brunker and Osage have excelled.

In barley the feed varieties Tregal and Velvon 11 have done well at all locations; Plains, an early type, has done well at the central and western stations, where earliness is of prime importance. Odessa has the best record of the malting varieties. In flax, Crystal and Dakota have been superior at Brookings, while the new variety Redwood has been outstanding during the last three years.

Note - The abbreviation L.S.D. in the yield tables refers to the least significant difference at the 5% level of probability.

Table 1. Monthly Rainfall and Temperature at the Stations at Which Test Plots were Located, 1950 Season.

Total Monthly Rainfall and Mean Temperature

Month	Rainfall, Inches					Mean Temperature, °F			
	Brookings	Highmore	Eureka	Cottonwood		Brookings	Highmore	Eureka	Cottonwood
April	1.63	.82	.93	1.02		36.9	37.2	35.6	40.2
May	4.99	2.25	5.17	2.08		53.6	52.8	51.4	52.7
June	1.42	1.02	1.22	.35		67.2	66.0	65.0	66.2
July	2.88	2.12	.57	2.08		67.4	68.0	66.9	69.6
August	.98	2.25	1.79	.30		65.4	68.4	66.0	69.4
Total	11.90	8.46	9.68	5.83	Mean:	58.1	58.5	57.0	59.6

Monthly Departure from Normal of Total Rainfall and Mean Temperature

Month	Rainfall, Inches					Temperature °F			
	Brookings	Highmore	Eureka	Cottonwood		Brookings	Highmore	Eureka	Cottonwood
April	-.37	-1.04	-.54	-.85		-8.2	-8.3	-8.1	-6.3
May	+2.08	- .35	+2.87	-.57		-3.2	-3.7	-3.8	-3.9
June	-2.43	-2.29	-2.14	-2.31		1.1	0.4	0.2	-0.9
July	+.70	- .23	-1.40	+.08		-4.5	-5.7	-5.1	-5.3
August	-1.70	+ .19	- .38	-1.30		-4.4	-3.2	-3.3	-3.1
Total	-1.72	-3.72	-1.59	-4.93	Mean:	-3.8	-4.1	-4.0	-3.9

Table 2. Spring Wheat Variety Test at the Main Experiment Station
Brookings 1946 - 1950

Variety	Yield in bushels per acre					1946-50 av.	1948-50 av.	Test wt. 1950 lbs./bu.
	1946	1947	1948	1949	1950			
Hard Red Spring								
Rival	44.0	22.5	31.0	25.0	28.1	30.1	28.0	58.8
Pilot	37.7	22.2	31.4	22.0	25.4	27.7	26.3	58.1
Hida	30.2	23.0	28.8	24.6	30.8	27.5	28.1	61.0
Rushmore	39.6	21.3	32.1	24.2	27.7	29.0	28.0	60.3
Thatcher	38.3	18.2	31.9	19.6	26.9	27.0	26.1	58.4
Cadet	40.4	17.4	29.2	17.8	25.4	26.0	24.1	57.1
Ceres	39.4	20.6	29.4	22.2	26.5	27.6	26.0	58.0
Lee	----	----	30.4	26.8	32.8	----	30.0	60.8
Ns.1831	----	----	32.1	23.4	25.8	----	27.1	57.8
Tri x That.630	----	----	27.9	26.1	31.6	----	28.5	60.5
Redman	----	----	----	21.0	26.2	----	----	57.0
HRP x C2202	----	----	28.7	23.8	32.4	----	28.3	61.1
Ns.2211	----	----	----	----	29.3	----	----	59.1
Durum								
Stewart	43.1	29.7	34.9	20.8	25.4	30.7	27.0	60.2
Vernum	30.6	28.4	30.6	23.0	32.4	29.0	29.0	62.5
Mindum	39.8	27.5	32.4	23.2	28.9	30.3	28.2	61.0
Nugget	----	----	----	----	29.3	----	----	59.6
Ld.306	----	----	----	22.1	28.1	----	----	59.2
L.S.D.	4.0	2.3	2.2	1.8	2.3	1.2	1.2	

Table 3. Spring Wheat Variety Test at the Central Substation, Highmore, 1946 - 1950

Variety	Yield in bushels per acre					1947-50 av.	1948-50 av.	Test wt. 1950 lbs/bu.
	1946	1947	1948	1949	1950			
Hard Red Spring								
Rival		25.9	16.0	12.0	11.7	16.4	13.2	59.5
Pilot		31.8	23.9	9.5	13.1	19.5	15.5	59.5
Mida		34.5	25.5	14.8	12.2	21.7	17.5	60.8
Rushmore		32.0	23.9	11.4	12.6	19.9	15.9	59.2
Thatcher		30.8	25.9	11.6	11.3	19.9	16.2	60.2
Cadet	Hail	25.2	22.3	10.4	15.1	18.2	15.9	58.8
Ceres		----	23.5	12.0	14.0	----	16.5	61.5
Lee		----	27.1	11.6	10.4	----	16.3	59.2
Ns1831		----	25.1	10.6	14.0	----	16.5	59.8
Tri x That 630		----	24.0	14.1	9.8	----	15.9	60.0
Redman		----	----	10.6	11.5	----	----	58.0
HRP x C 2202		----	20.1	11.2	13.0	----	14.7	60.8
Ns. 2211		----	----	----	12.5	----	----	59.5
Durum								
Stewart		32.8	25.9	15.7	14.7	22.3	18.7	62.5
Vernum		34.0	19.1	9.8	15.7	19.6	14.9	63.0
Mindum		33.3	22.3	11.1	15.6	20.5	16.7	62.7
Ld 306		----	----	10.8	13.1	----	----	60.5
Nugget		----	----	----	12.5	----	----	61.3
L.S.D.		6.7	3.7	2.4	1.8	2.0	1.6	

Table 4. Spring Wheat Variety Test at the North Central Substation Eureka, 1946 - 1950

Variety	Yield in bushels per acre					1946-50 av.	1948-50 av.	Test wt. 1950 lbs/bu.
	1946	1947	1948	1949	1950			
Hard Red Spring								
Rival	27.1	17.2	12.9	7.6	15.9	16.1	12.1	60.8
Pilot	27.1	18.0	17.1	6.2	15.0	16.7	12.8	60.5
Mida	23.1	29.0	14.6	7.3	17.6	18.3	13.2	63.0
Rushmore	22.2	29.5	13.6	10.2	16.9	18.5	13.9	61.0
Thatcher	18.3	20.6	14.0	6.2	17.4	15.3	12.5	59.7
Cadet	27.1	18.8	13.2	5.0	14.5	15.7	10.9	58.7
Ceres	25.6	26.6	15.5	7.8	14.6	18.0	12.6	61.3
Lee	----	----	12.4	7.8	15.9	----	12.0	62.8
Ns. 1831	----	----	19.0	4.1	17.1	----	13.4	60.0
Tri x That 630	----	----	11.8	9.2	16.1	----	12.4	60.0
HRP x C2202	----	----	15.4	6.6	16.3	----	12.8	60.0
Redman	----	----	----	----	15.0	----	----	60.7
Ns.2211	----	----	----	----	17.3	----	----	60.0
Durum								
Stewart	22.3	23.9	16.4	7.8	18.7	17.8	14.3	62.8
Vernum	28.7	27.4	14.8	7.0	18.8	19.3	13.9	63.8
Mindum	23.0	26.4	18.0	9.9	18.7	19.2	15.5	63.2
Ld.306	----	----	----	8.2	18.9	----	----	62.2
Nugget	----	----	----	----	19.5	----	----	62.3
L.S.D.	6.5	12.0	2.7	2.2	2.6	2.9	1.4	

Table 5. Spring Wheat Variety test at the Range Field Station, Cottonwood, 1946 - 1950

Variety	Yield in bushels per acre					1946-50 av.	1948-50 av.	Test wt. 1950 lbs./bu.
	1946	1947	1948	1949	1950			
Hard Red Spring								
Rival	21.0	13.1	13.3	9.8	14.6	14.4	12.6	60.0
Pilot	15.8	16.3	12.1	10.1	17.1	14.3	13.1	60.0
Mida	16.5	10.4	12.3	11.0	17.4	13.4	13.6	62.0
Rushmore	21.5	15.5	12.8	13.0	17.8	16.1	14.5	59.8
Thatcher	16.9	16.8	12.2	13.5	16.6	15.2	14.1	59.7
Cadet	16.3	15.9	--	9.0	21.1	--	--	59.0
Ceres	20.1	14.8	14.1	8.8	20.7	15.7	14.5	61.7
Lee	--	--	10.7	12.7	14.4	--	12.6	59.0
Ns.1831	--	--	12.0	9.1	18.1	--	13.1	60.7
Redman	--	--	--	12.3	17.4	--	--	57.0
HRP x C2202	--	--	--	11.8	17.0	--	--	61.0
Ns.2211	--	--	--	--	17.2	--	--	60.0
Tri x That 630	--	--	--	14.0	17.1	--	--	60.5
Durum								
Stewart	--	15.2	18.2	10.0	12.9	--	13.7	63.7
Vernum	--	14.0	13.0	--	11.0	--	--	63.0
Mindum	--	18.4	16.0	10.9	10.4	--	12.4	62.7
Nugget	--	--	16.4	11.4	12.1	--	13.3	62.0
Ld 306	--	--	17.4	9.0	11.4	--	12.6	61.2
L.S.D.	N.S.	N.S.	2.2	2.4	3.6	1.5	1.6	

Table 6. Spring Wheat Performance Data for 1950 Season, Brookings, Highmore and Eureka

Variety	Brookings					Highmore			Eureka		
	Date headed	Date ripe	Ht. In.	Stem rust	Leaf rust	Date headed	Stem rust	Leaf rust	Ht. In.	Stem rust	Leaf rust
Hard Red Spring											
Rival	6/28	8/7	31	40	50	6/30	10	40	26	5	30
Pilot	6/29	8/7	31	15	55	6/30	5	40	28	3	35
Mida	6/27	8/6	31	30	45	6/28	10	30	26	4	30
Rushmore	6/25	8/5	27	15	50	6/26	5	40	25	2	30
Thatcher	6/26	8/3	26	12	75	6/27	3	50	23	2	50
Cadet	7/3	8/8	31	25	60	7/2	8	50	25	1	30
Ceres	6/28	8/5	29	30	60	6/29	15	40	26	5	40
Lee	6/23	8/2	27	15	12	6/26	3	T+	24	2	2
Ns.1831	7/1	8/8	31	20	55	6/30	5	50	25	5	40
Redman	6/28	8/6	29	8	45	6/29	2	40	27	2	30
HRP x C2202	6/28	8/5	31	20	10	6/29	5	10	25	2	10
Ns.2211	6/25	8/4	28	35	45	6/25	10	20	25	3	20
Tri x That 630	6/24	8/4	28	20	10	6/26	3	10	26	2	5
Durum											
Stewart	7/1	8/9	38	40	0	6/29	3	0	32	15	0
Vernum	6/28	8/6	36	30	0	6/28	2	0	30	10	0
Mindum	6/30	8/8	38	50	3	6/29	10	0	31	18	0
Nugget	6/25	8/4	29	50	0	6/26	5	0	28	20	0
Ld.306	6/28	8/5	31	45	0	6/28	5	0	30	20	0

Table 7. Winter Wheat Variety Test at the Main Experiment Station, Brookings, 1946 - 1950.

Variety	Yield in bushels per acre					1946-50 av.	1950 winter survival	1950 Test wt.	1950 Date Headed	1950 Pct. Leaf	1950 Rust Stem
	1946	1947	1948	1949	1950						
Nebred	20.6	36.4	30.3	21.3	29.2	27.6	50	61	6/24	80	1
Minturki	19.9	37.4	33.4	20.2	26.6	27.5	60	58	6/26	80	Tr
Minter	28.0	35.5	34.9	29.6	31.7	31.9	60	60	6/26	80	Tr-
Pawnee	--	14.9	0.0	21.7	16.0	--	30	59	6/20	80	1
Iowin	--	27.2	25.0	25.2	27.5	--	60	60	6/25	60	Tr
Marvin	--	16.2	36.3	27.5	31.5	--	70	60	6/24	80	1
Iohardi	--	--	--	21.9	30.8	--	55	61	6/23	80	1
L.S.D.	5.2	3.2	5.0	6.0	1.8	2.0					

Table 8. Winter Rye Variety Test at the Main Experiment Station, Brookings, 1946 - 1950.

Variety	Yield in bushels per acre					4-yr. av.	1950 Test wt. lbs/bu.	1950 Pct. winter survival
	1946	1947	1948	1949	1950			
Dakold	39.1	--Hail--	40.6	34.6	44.6	39.7	55	100
Pierre	44.6		44.8	34.3	43.2	41.7	57	100
Emerald	41.3		43.3	36.2	47.1	41.9	56	100
White Soviet	--		42.6	31.5	48.9	--	56	100
L.S.D.	3.8		1.7	2.9	4.5	1.7		

Table 9. Winter Rye Variety test at the North Central Substation, Eureka, 1949 - 1950.

Variety	Yield in bushels per acre			1950 Test wt. lbs/bu.	1950 Pct. winter survival
	1949	1950	2-yr. av.		
Dakold	11.2	13.5	12.4	51	95
Pierre	15.3	22.0	18.6	53	95
Emerald	12.4	14.6	13.5	49	92
White Soviet	10.0	18.5	14.2	48	90
L.S.D.	3.4	5.0	3.0		

Table 10. Winter Rye, Variety Test at the Central Substation, Highmore, 1947 - 1950

Variety	Yield in bushels per acre					1950 Pct. Winter Survival
	1947	1948	1949[1]	1950	3-yr. Av.	
Dakold	33.9	9.8		9.2	17.6	100
Pierre	35.1	11.5		7.8	18.1	100
Emerald	36.8	7.7		7.2	17.2	100
White Soviet				7.5		100
L.S.D.	3.5	3.0		1.7	1.6	

Table 11. Winter Rye Variety Test at the Range Field Station, Cottonwood, 1950

Variety	Yield in bushels per acre	Test wt. lbs/bu.	Pct. winter Survival
Dakold	17.9	57	100
Pierre	17.4	57	100
Emerald	18.4	56	100
L.S.D.	7.1		

1/ Failued to emerge due to fall drouth

Table 12. Oat Variety Test at the Main Experiment Station, Brookings 1946 - 1950

Variety	Yield in bushels per acre					1946-50 av.	1948-50 av.	Test Wt 1950 lbs/bu.
	1946	1947	1948	1949	1950			
Richland	76.2	53.6	73.2	68.0	79.8	70.1	73.6	33.2
Tama	71.1	72.8	68.8	72.7	72.5	71.6	71.3	34.0
Vikota	66.0	73.7	67.4	70.9	76.8	70.9	71.7	35.0
Brunker	56.2	71.6	59.9	81.5	68.8	67.2	70.1	35.6
Trojan	61.7	55.8	73.6	74.6	65.9	66.3	71.3	33.2
Clinton	91.8	92.5	64.4	71.6	73.2	78.7	69.7	38.1
Mindo	93.0	89.4	72.0	73.0	73.9	80.2	72.9	35.5
Bonda	91.0	82.8	67.4	64.5	68.1	74.7	66.6	40.0
Cherokee	--	89.8	77.0	69.4	69.5	--	71.9	38.2
Nemaha	--	94.1	72.8	66.3	64.4	--	67.8	38.2
Osage	--	71.8	56.9	65.9	68.6	--	63.8	32.0
James*	--	105.0	80.7	79.5	84.8	--	81.6	47.0
41115-1087	--	101.0	73.2	81.2	82.7	--	79.0	36.4
41125-1138	--	93.2	77.5	83.3	83.4	--	81.4	39.2
Andrew	--	--	77.0	73.0	79.0	--	76.3	33.2
Zephyr	--	--	74.2	66.6	80.5	--	73.7	33.8
Shelby	--	--	74.8	70.6	81.3	--	75.5	38.5
41115-1111	--	--	74.3	80.1	86.4	--	80.2	36.5
C.I. 4672	--	--	--	--	79.0	--	--	36.5
L.S.D.	3.7	8.1	5.2	10.0	6.4	3.1	4.3	

*hulless, yield adjusted

Table 13. Oat Variety Test at the Central Substation, Highmore
1946 - 1950

Variety	Yield in bushels per acre							Test Wt.
	1946	1947	1948	1949	1950	1947-50 av.	1948-50 av.	1950 lbs/bu.
Richland	Hail	80.2	84.5	26.0	36.5	56.8	49.0	31.0
Tama		77.0	74.2	19.9	32.3	50.8	42.1	30.8
Vikota		87.4	94.2	29.8	33.3	61.2	52.4	30.7
Brunker		75.9	82.7	27.0	30.8	54.1	46.8	28.2
Trojan		68.3	84.9	18.7	30.0	50.5	44.5	27.5
Mindo		84.3	94.7	28.1	32.4	59.8	51.7	31.7
Ajax		77.9	99.6	20.5	33.6	57.9	51.2	28.0
Cherokee		78.3	87.7	29.8	27.3	55.8	48.2	29.5
Nemaha		89.7	69.0	29.8	30.0	54.6	42.9	31.8
Osage		63.5	78.8	21.4	29.7	48.3	43.3	28.8
James*		97.7	93.4	33.4	33.7	64.5	53.5	45.7
41115-1087		87.0	78.6	26.0	37.6	57.3	47.4	32.7
41125-1138		91.3	97.3	21.4	31.0	60.2	49.9	32.5
Andrew		--	84.4	31.2	30.7	--	48.7	30.2
Zephyr		--	97.7	24.2	34.3	--	52.0	27.7
Marion		--	107.9	24.8	33.9	--	55.5	31.0
41115-1111		--	86.8	27.9	33.2	--	45.9	32.5
C.I. 4672		--	--	33.5	35.1	--	--	30.8
Clinton		82.2	85.4	25.7	30.9	56.0	47.3	33.5
L.S.D.		12.0	9.5	6.8	3.9	4.3	4.1	

*hulless, yield adjusted.

Table 14. Oat Variety Test at the North Central Substation, Eureka, 1946 - 1950

Variety	Yield in bushels per acre							Test wt.
	1946	1947	1948	1949	1950	1946-50 av.	1948-50 av.	1950 lbs/bu.
Richland	46.4	85.1	51.2	16.5	37.2	47.3	34.7	32.0
Tama	52.8	73.8	56.9	11.8	36.4	46.3	35.0	33.8
Vikota	46.2	72.1	47.0	15.7	31.5	42.5	31.4	32.0
Brunker	30.5	68.1	36.9	14.7	31.4	36.3	27.7	35.7
Trojan	28.3	67.0	42.7	12.2	32.9	36.6	29.2	31.0
Clinton	38.7	72.0	41.7	14.2	36.8	40.7	30.9	36.2
Mindo	30.1	80.9	45.8	16.2	35.8	41.7	32.6	35.2
Osage	45.2	81.4	54.2	13.8	33.4	45.6	33.8	34.0
Ajax	50.2	--	54.5	16.9	38.2	--	36.5	30.3
Cherokee	--	--	41.6	13.8	38.4	--	31.2	37.7
Nemaha	--	--	35.6	13.0	40.5	--	29.7	35.0
James *	--	--	47.1	13.9	37.3	--	32.8	44.7
41115-1087	--	--	45.4	14.3	41.6	--	33.8	34.3
41125-1138	--	--	34.2	19.6	34.2	--	29.3	34.3
Andrew	--	--	35.5	15.5	34.4	--	28.4	34.8
Zephyr	--	--	40.8	19.1	28.4	--	29.4	30.0
Marion	--	--	54.0	16.5	40.0	--	36.8	32.2
41115-1111	--	--	38.3	18.2	31.4	--	29.3	35.2
C.I. 4672	--	--	--	14.8	33.4	--	--	32.0
L.S.D.	12.0	N.S.	6.4	6.3	N.S.	4.2	4.2	

*hulless, yield adjusted.

Table 15. Oat Variety Test at the Range Field Station, Cottonwood, 1946 - 1950

Variety	1946	1947	1948	1949	1950	1947-50 av.	1948-50 av.	Test Wt. 1950 lbs/bu.
Richland	------Oat Nursery destroyed------	46.3	34.2	21.3	39.1	35.2	31.5	29.8
Tama		45.3	38.4	17.0	39.0	34.9	31.4	32.2
Vikota		53.1	36.5	21.8	36.1	36.9	31.4	32.3
Brunker		48.3	43.6	24.8	37.1	38.4	35.1	31.0
Trojan		50.9	37.0	18.7	37.2	35.9	30.9	28.2
Clinton		41.6	37.0	19.4	38.0	34.0	31.4	35.0
Mindo		50.5	41.9	24.0	36.8	38.3	34.2	32.0
Ajax		51.3	46.1	12.7	36.0	36.5	31.6	32.7
Cherokee		37.7	39.8	25.1	30.1	35.7	31.7	33.3
Nemaha		36.3	41.3	20.8	32.4	32.7	31.5	32.2
Osage		56.3	40.2	31.2	41.3	42.2	37.5	31.0
James*		53.2	43.2	13.4	42.9	38.2	33.1	48.0
41115-1087		49.6	35.3	22.4	39.2	36.6	32.3	32.2
41125-1138		45.3	29.4	25.2	33.6	33.4	29.4	31.5
Andrew		--	39.0	24.9	38.5	--	34.1	32.7
Marion		--	--	23.7	38.2	--	--	33.0
C.I. 4672		--	--	33.3	38.3	--	--	31.0
Zephyr		--	--	--	33.2	--	--	30.8
41115-1111		--	--	--	35.3	--	--	32.2
L.S.D.		11.8	7.2	6.1	7.0	4.2	3.9	

*hulles, yield adjusted.

Table 16. Oat Performance Data, 1950 Season, Brookings, Highmore and Cottonwood.

Variety	Brookings						Highmore	Cottonwood
	Date headed	Date ripe	Ht. in.	Red leaf	Leaf rust	Stem rust	Date headed	Date headed
Richland	6/26	8/3	25	L	20	10	6/25	6/24
Tama	6/28	8/3	26	M-	T	10	6/25	6/24
Vikota	6/28	8/4	25	M-	T	10	6/26	6/25
Brunker	6/21	7/29	25	L+	20	40	6/18	6/21
Trojan	6/21	7/28	25	L+	15	30	6/19	6/21
Clinton	6/26	8/5	27	M-	30	20	6/25	6/26
Mindo	6/22	8/2	25	M-	20	10	6/22	6/24
Bonda	6/26	8/5	28	M	25	15	--	--
Cherokee	6/24	8/2	26	H-	20	15	6/23	6/26
Nemaha	6/24	8/2	26	H-	20	15	6/22	6/25
Osage	6/24	8/1	24	L+	T	10	6/22	6/22
James	6/25	8/6	30	L+	25	20	6/26	6/25
41115-1087	6/26	8/5	29	M	30	15	6/25	6/25
41125-1138	6/26	8/5	29	L+	20	8	6/24	6/26
Andrew	6/22	8/1	27	L+	5	15	6/21	6/25
Zephyr	6/29	8/7	31	L-	20	20	6/27	6/27
Shelby	6/30	8/7	30	L	15	15	--	--
41115-1111	6/24	8/2	28	M	15	5	6/24	6/24
C.I. 4672	6/22	8/2	26	L	15	10	6/23	6/25

Table 17. Barley Variety Test at the Main Experiment Station, Brookings, 1946-1950

Variety	Yield in bushels per acre					1946-50 av.	Test wt. lbs/bu.	Date headed	Ht. In.
	1946	1947	1948	1949	1950				
Feebar	43.2	47.4	40.5	58.6	55.9	49.1	44	6/29	20
Odessa	49.5	47.5	37.9	57.2	56.4	49.7	48	7/1	22
Plains	28.6	46.8	38.9	77.4	45.8	47.5	50	6/25	23
Spartan	34.4	43.8	30.1	62.8	50.0	44.2	50	6/25	22
Manchuria	40.1	45.9	35.7	62.4	57.8	48.4	48	7/1	23
Kindred	33.8	43.0	33.1	59.5	51.3	44.1	46	6/29	21
Tregal	54.2	51.7	44.1	65.6	64.2	56.0	46	7/1	22
Velvon 11	52.1	50.8	44.1	71.7	59.1	55.6	44	7/1	23
Wisc. 38	38.5	47.8	35.3	64.2	57.1	48.6	47	7/3	26
Mars	--	43.7	34.0	58.6	46.3	--	48	6/28	20
Moore	--	46.0	36.9	52.5	55.0	--	47	7/2	27
Montcalm	--	--	41.5	62.8	50.4	--	47	7/2	26
L.S.D.	3.6	6.4	3.7	8.0	4.8	2.5			

Table 18. Barley Variety Test at the Central Substation Highmore, 1946 - 1950

Variety	Yield in bushels per acre					1947-50 av.	Test wt 1950 lbs/bu.
	1946	1947	1948	1949	1950		
Odessa	Hail	37.1	29.9	14.4	20.1	25.4	48
Spartan		33.2	36.4	14.0	11.9	23.9	48
Wisc. 38		36.7	28.9	14.6	19.7	25.0	48
Feebar		44.5	28.9	13.2	18.3	26.2	45
Plains		39.3	35.9	13.5	11.8	25.1	50
Tregal		45.3	33.4	15.6	19.7	28.5	50
Mars		31.7	33.9	10.9	12.3	22.2	50
Velvon 11		46.0	34.9	20.2	23.9	31.2	44
Kindred		29.6	25.4	12.4	16.5	21.0	48
Moore		--	29.9	11.5	14.9	--	42
Montcalm		--	29.4	14.4	20.1	--	46
L.S.D.		5.6	4.7	4.7	6.0	2.7	

Table 19. Barley Variety Tests at the North Central Substation Eureka, 1946-1950

Variety	Yield in bushels per acre					1946-50 av.	1950 Test wt. lbs/bu.
	1946	1947	1948	1949	1950		
Odessa	17.0	36.3	43.2	22.9	31.4	30.2	51
Spartan	21.6	40.2	35.6	15.9	27.2	28.1	50
Wisc. 38	14.5	46.3	33.1	20.0	30.6	28.9	48
Feebar	26.6	46.7	38.8	20.8	29.6	32.5	47
Plains	19.8	41.9	37.6	24.3	22.9	29.3	50
Tregal	32.3	40.4	49.7	24.1	32.6	35.8	50
Mars	----	31.8	29.9	17.6	24.6	----	51
Velvon 11	----	43.0	43.4	24.8	37.5	----	49
Kindred	----	38.4	34.2	19.5	26.6	----	50
Montcalm	----	----	48.2	22.7	30.7	----	48
Moore	----	----	37.5	22.7	29.9	----	48
L.S.D.	7.9	11.0	7.9	8.0	5.8	3.7	

Table 20. Barley Variety Test at the Range Field Station
Cottonwood, 1946-1950

Variety	Yield in bushels per acre					1946-50 av.	Test wt. lbs/bu.
	1946	1947	1948	1949	1950		
Odessa	41.7	30.0	17.1	13.9	15.1	23.6	47
Spartan	31.5	25.7	16.7	17.0	10.9	20.4	48
Feebar	44.1	29.4	13.5	18.1	12.8	23.6	46
Misc. 38	47.8	27.7	12.0	13.8	10.7	22.4	50
Plains	53.7	30.6	16.7	17.9	16.1	27.0	48
Tregal	55.2	41.8	19.5	18.8	18.4	30.7	50
Velvon 11	47.5	39.8	15.6	23.3	22.5	29.7	47
Compana	41.9	27.7	17.2	24.2	20.5	26.3	47
Mars	----	30.2	15.1	10.4	14.6	----	46
Montcalm	----	----	17.9	14.1	8.3	----	50
Moore	----	----	19.2	11.9	8.5	----	44
L.S.D.	8.0	10.6	4.1	7.8	6.0	3.4	

Table 21. Flax Variety Test at the Main Experiment Station, Brookings 1946 - 1950

Variety	Yield in bushels per acre					1946-50 av.	1948-50 av.	Test wt. 1950 lbs/bu.
	1946	1947	1948	1949	1950			
Bison	9.6	16.3	20.4	13.0	18.8	15.6	17.4	55.5
Redwing	10.9	15.4	18.4	12.6	18.8	15.2	16.6	56.2
Koto	10.7	15.6	20.0	13.4	20.5	16.0	17.9	55.4
Dakota	13.6	16.0	20.4	16.6	21.7	17.6	19.6	55.2
Crystal	15.5	18.8	17.1	15.8	25.1	18.4	19.3	54.2
Royal	15.8	15.2	21.8	15.2	25.9	16.7	20.9	56.0
Sheyenne	----	16.2	20.0	13.8	21.3	----	18.3	56.0
Arrow	----	----	20.6	15.8	25.5	----	20.6	56.0
B-5128	----	----	21.5	16.2	27.2	----	21.6	55.8
Minerva	----	----	20.5	15.0	24.7	----	20.1	54.6
Redwood	----	----	22.4	17.4	26.3	----	22.0	55.4
C.I. 1135	----	----	----	16.6	23.0	----	----	54.8
L.S.D.	1.7	1.5	1.8	1.4	1.6	0.7	0.9	

Table 22. Flax Variety Test at the Highmore and Eureka Substations.
1948 - 1950

Variety	Highmore Yield in bu. per acre 1948	1949	1950	3 yr. av.	Test wt. 1950 lbs/bu.	Eureka Yield in bu. per acre 1948	1949	1950	3 yr. av.	Test wt. 1950 lbs/bu.
Bison	9.4	3.8	8.3	7.2	53.5	10.6	13.2	9.8	11.2	44.5
Redwing	6.8	4.7	6.1	5.9	53.8	11.2	10.3	7.2	9.6	44.5
Sheyenne	7.2	5.1	5.8	6.0	53.0	10.6	14.1	11.8	12.2	49.0
Koto	7.6	4.3	7.0	6.3	53.2	15.4	10.3	10.3	12.0	46.0
Dakota	7.2	4.3	6.1	5.9	53.7	15.4	12.0	10.0	12.4	46.0
Arrow	12.4	1.7	7.7	7.3	53.8	11.6	10.3	8.6	10.2	46.0
Redwood	--	---	8.3	---	53.2	--	--	10.8	--	46.5
C.I. 1135	--	---	7.6	---	53.2	--	--	9.8	--	49.0
L.S.D.	--	--	--	2.4	--	--	--	--	3.9	--

Table 23. Flax Performance Data at the Main Experiment Station, Brookings, 1950

Variety	Percent Stand	Blooming dates First	Full	Last	Date Ripe	Ht. In.	Rust	Pasmo	Second growth
Bison	65	6-23	6-28	7-12	8-12	19	H	M	0
Redwing	68	6-20	6-26	7-10	8-12	17½	M+	M	L-
Koto	85	6-23	6-28	7-14	8-16	19	H-	H+	L-
Dakota	85	6-24	6-27	7-14	8-16	19	M+	M+	L
Crystal	82	6-24	6-29	7-14	8-17	19	0	M	M-
Royal	90	6-24	6-28	7-16	8-18	18	H	M	M-
Sheyenne	85	6-20	6-26	7-9	8-14	18	0	H-	L
Arrow	88	6-24	6-27	7-12	8-16	20	M-	M	L
B-5128	82	6-24	6-30	7-14	8-19	20	0	M	L+
Minerva	82	6-24	6-28	7-14	8-19	19	M-	M+	M-
Redwood	80	6-24	6-28	7-14	8-17	19½	0	M+	M-
C.I. 1135	90	6-20	6-25	7-10	8-17	17	0	L-	L

Table 24. Recommended and Acceptable Spring Wheat and Durum Wheat Varieties for South Dakota.

District	Spring Wheat		Durum Wheat	
	Recommended	Acceptable	Recommended	Acceptable
Southeast	Rushmore Lee Rival Mida	Pilot	Nugget	Stewart Vernum
East Central	Rushmore Rival Mida Lee	Pilot	Vernum Nugget	Stewart Mindum
Northeast	Rushmore Lee Rival Mida	Pilot	Vernum Nugget Stewart	Mindum
South Central	Rushmore Lee Rival Mida	Pilot	Vernum Nugget Kubanka	Mindum
Central	Rushmore Lee Rival Mida	Pilot	Vernum Nugget Kubanka	Mindum
North Central	Rushmore Lee Rival Mida	Pilot	Vernum Nugget Kubanka	Mindum
Southwest	Rushmore Lee Mida	Rival Pilot	Vernum Nugget	Kubanka Mindum
West	Rushmore Lee Mida	Rival Pilot Thatcher	Vernum Nugget	Kubanka Mindum

Table 25. Recommended and Acceptable Oat and Barley Varieties for South Dakota.

District	Oats		Barley	
	Recommended	Acceptable	Recommended	Acceptable
Southeast	Clinton	Shelby	Odessa*	Moore*
	Cherokee	Andrew	Plains	Velvon 11
	Nemaha	Marion	Feebar	Kindred*
	Bonda	Mindo		
	James			
East Central	Clinton	Andrew	Odessa	Moore
	Cherokee	Marion	Plains	Kindred
	Nemaha	Shelby	Feebar	
	Bonda		Tregal	
	Mindo		Velvon 11	
Northeast	Clinton	Andrew	Odessa	Moore
	Marion	Mindo	Plains	Kindred
	Cherokee	Shelby	Feebar	
	Nemaha		Tregal	
	Bonda		Velvon 11	
	James			
South Central	Cherokee	Andrew	Plains	Odessa
	Nemaha	James+	Feebar	Kindred
	Mindo	Marion	Tregal	
	Vikota		Velvon 11	
Central	Cherokee	Andrew	Plains	Odessa
	Nemaha	James+	Feebar	Kindred
	Mindo		Velvon 11	
	Vikota		Tregal	
North Central	Cherokee	Andrew	Odessa	Kindred
	Nemaha	Marion	Plains	
	Mindo		Feebar	
	Vikota		Tregal	
	James+		Velvon 11	
Southwest	Brunker	Trojan	Spartan	Compana
	Vikota		Plains	
	Osage		Velvon 11	
West	Brunker	Mindo	Spartan	Compana
	Osage		Plains	
	Vikota		Velvon 11	

+ as hulless oat only

* malting types

Table 26. Recommended and Acceptable Varieties of Flax and Winter Wheat for South Dakota

District	Flax		Winter Wheat	
	Recommended	Acceptable	Recommended	Acceptable
Southeast	Sheyenne	Redwood	Minter Iowin	
East Central	Sheyenne Redwood	B-5128 Dakota Koto	Minter	Nebred
Northeast	Sheyenne Redwood	B-5128 Dakota Koto Redwing		
South Central 1/	Sheyenne	Redwing	Minter Nebred	
Central	Sheyenne	Redwing		
North Central	Sheyenne	Redwing Dakota		
Southwest 1/	Sheyenne	Redwing	Minter Nebred	
West 1/	Sheyenne	Redwing	Minter Nebred	

1/ Flax growing very hazardous in this area.

In Rye, the variety Pierre is recommended for the entire state. Emerald should prove satisfactory for southeast and east central.